



# SHADOZ Notes

## Southern Hemisphere Additional Ozonesondes

A NASA/Goddard Space Flight Center public archive of tropical and remote ozonesonde profile data

SHADOZ is a NASA project to augment and archive balloon-borne ozonesonde launches and to archive data from tropical and remote operational sites. The project was initiated in 1998 by NASA/Goddard Space Flight Center with other US and international co-investigators. There are currently thirteen stations launching ozonesondes in the

SHADOZ Sites, URL=<http://croc.gsfc.nasa.gov/shadoz>



SHADOZ network. The collective data set provides the first climatology of tropical ozone in the equatorial region, enhances validation studies aimed at improving satellite remote sensing techniques for tropical ozone estimations, and serves as an educational tool to students, especially in participating countries.

## SHADOZ Station Principal Investigators

**Anne Thompson** – SHADOZ Network Principal Investigator (NASA/GSFC, USA), Archiver/ Webmaster: J. C. Witte (SSAI), C. Ashburn (SSAI, USA), B. Calpini, R. Stuebi and G. Levrat (Meteoswiss, Switz.), G. J. R. Coetzee (SAWS, S. Africa), J. Andres Diaz (CENAT, Univ. Costa Rica), M. Fujiwara (Hokkaido Univ., Jap.), N. Komala (LAPAN, Indonesia), N. Leme, F. Raimundo da Silva (INPE, Brazil), M. Mohamad and Z. Zainal (Malaysian Met. Dept.), F. Mani and M. Maata (USP), C. Mutai and Z. Shilenje (Kenya Met. Dept.), S.-Y. Ogino (JAMSTEC, Jap.), B. Johnson, P. Cullis, and C. Sterling (NOAA/ESRL/GMD, USA), F. Posny (La Réunion Univ., Fr.), A. PETERS and M. Allart (KNMI, Netherlands), H. Vömel (NCAR, USA), R. Selkirk (USRA, USA), M. Shiotani (Kyoto Univ, Jap.), H. T. T. Ha (AMO, VNHNS, Viet.), H. Tsuruta (Univ. Tokyo, Jap.), S. Yonemura (NIAES, Jap.)

The station principal investigators are responsible for the original data processing and should be consulted for details of their launch procedures, scheduling, and appropriate references to their data record. The SHADOZ homepage includes the contact information.

## SHADOZ Site Reactivation: Ascension Is. U.K.

April 2016 saw the re-activation of the Ascension Is. U.K. station after an almost six year suspension of launches. SHADOZ PI Anne M. Thompson and Ryan Stauffer (Post-doc fellow, ESSIC/Univ. MD) travelled to Ascension Is. for two weeks of hands-on training with the US Air Force contractor personnel (Wolf Creek Federal Services). Nine successful launches were conducted during the training and all data now reside in the SHADOZ archive under currently operating stations. Weekly, mid-week launches have resumed with the help of a handful of on-site operators: Bill Clark, Drew Avery, Jim Bates, Harry 'Butch' Bleasdale, Patrick Benjamin, Peter Crane, Martin 'Whitey' Cranfield, and George 'Dover' Thomas. The team shall coordinate launches to coincide with typical satellite overpass times of ~1300 local mid-week.

The NASA ozonesonde launches at Ascension began in 1990 and continued to 1992 as part of the DC-8 TRACE-A Campaign. The SHADOZ series of launches was started in 1998 in collaboration with the Wallops Flight Facility ozone group (Francis Schmidlin NASA/WFF/Emeritus) and were suspended when Ascension balloon operations ended. Thompson and Stauffer installed the ozonesonde ground station with IMet radiosondes and ENSCI ECC sensors. A Thermo 49i ozone analyzer was also installed at Ascension for calibrating the sondes to the measured ambient ozone, something that has never been done before at Ascension.



*Anne Thompson surrounded by the Ascension Is. ozonesonde operations team.*



*Ryan Stauffer (left photo) with the IMet radiosonde/ENSCI ozonesonde set-up.*



*Anne Thompson with operators at the balloon filling station.*

## New Zealand Trip

In January and February 2016, SHADOZ PI Anne Thompson and Archiver Jacquie Witte visited New Zealand. Thompson gave SHADOZ themed lectures at the University of Canterbury in Christchurch and the University of Otago in Dunedin. At both locations Thompson also met with groups of local researchers planning to participate in a NZ initiative to work with satellite remote sensing data.

Jacquie Witte collaborated with Greg Bodeker (Bodeker Scientific: <http://www.bodekerscientific.com/>) and ozonesonde experts in writing the Global Climate Observing System (GCOS) Reference Upper-Air Network (GRUAN) ozonesonde technical document. The document outlines mandatory and optional operating procedures based on best practices defined by the peer reviewed literature, personal communications with members of ASOPOS (Assessment of Operating Procedures for Ozone Sondes), and the WMO/GAW Report No 201 on ozonesonde quality assurance. The Technical Document is being prepared for peer review and the summary and key points have been presented at GRUAN's 8<sup>th</sup> implementation and coordination meeting (ICM-8) held 25-29 April 2016 in Boulder, CO, USA. GRUAN homepage: [http://www.dwd.de/EN/research/international\\_programme/gruan/home.html](http://www.dwd.de/EN/research/international_programme/gruan/home.html)



*Jacquie Witte at Bodeker Scientific, Alexandra, NZ.*

## Meeting Announcements

### GMAC Conference: 17-18, May, 2016 at Boulder, CO, USA

SHADOZ will be represented at NOAA's Global Monitoring Annual Conference (GMAC): <http://www.esrl.noaa.gov/gmd/annualconference/>. On behalf of SHADOZ network, Jacquie Witte shall give a presentation on the current status, recent activities, and updates on the reprocessing efforts. Bryan Johnson (NOAA/ESRL/GMD) who is the PI of SHADOZ stations' Hilo-Hawaii, Suva-Fiji, American Samoa, and San Cristobal-Ecuador shall also contribute updates these stations reprocessing.



**The Quadrennial Ozone Symposium (QOS)** will be held 4-9 September 2016 <[www.ozone-symposium-2016.org](http://www.ozone-symposium-2016.org)>. Nine SHADOZ related abstracts have been submitted to sessions related



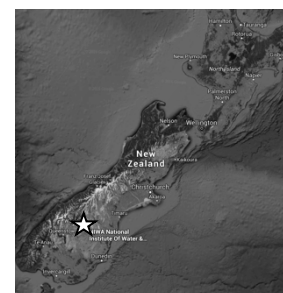
to tropospheric ozone observations and measurement techniques. Prior to QOS, a three day ozonesonde workshop is planned to discuss outstanding issues concerning operating procedures, reprocessing methods, and the status of homogeneous data records. The meeting will be comprised of ozonesonde experts and station operators, a number of whom are members of the SHADOZ network. If you are interested in attending contact Dr. Herman Smit <[h.smit@juelich.de](mailto:h.smit@juelich.de)>.

## New station to join SHADOZ: Lauder, NZ

The Lauder atmospheric research station is run by New Zealand's National Institute of Water and Atmospheric Research (NIWA) and has a long historic record of launching weekly ozonesondes since the mid-1980's. Since 2004, Lauder has added monthly launches of NOAA's Frost Point Hygrometer (FPH) sondes that measure water vapor up to the lower stratosphere. Lauder station is also GRUAN for its Vaisala RS-92 radiosonde measurement program. The station is located in the semi-arid region of Central Otago in the NZ's Southern Island (elevation ~ 370 m) and sheltered by three mountain ranges. For the past 50 years, Lauder research station has specialized in measuring CFC, ozone, UV, and greenhouse gases. More information about the station can be found at: <https://www.niwa.co.nz/atmosphere/facilities/lauder-atmospheric-research-station>. Richard Querel (NIWA) currently manages the ozonesonde and water vapor sonde program.



**NIWA**  
Taihoro Nukurangi



Anne Thompson (SHADOZ PI) and Jacquie Witte (Archiver) toured the Lauder, NZ station in early February 2016 and gave a SHADOZ introduction presentation. Although not a tropical station, Lauder is a value-added station for SHADOZ because of its remote and exotic location the southern mid-latitude hemisphere. SHADOZ operates under the philosophy of inclusion and welcomes Lauder's participation. Data shall be forthcoming this year, so stay tuned!



Group photo at Lauder station: (Left-Right) Richard Querel, Jacquie Witte, Anne Thompson, Wills Dobson, and Jordis Tradowsky



Lauder launches IMet Radiosondes with Ensco Sondes. FPH sondes are flown with Vaisala radiosondes.

